

The center of the storm seemed to be over a hill near Laurel Lake, as the hailstones were smaller in other parts of the town. From a cottage on this hill the observer seemed to see the southwest wind drive the storm toward Wachusett Mountain, 25 miles southeast, then a countercurrent of east wind blew the cloud back directly toward the hill and the cottage; and the sultry afternoon was followed by the storm, which began with cool winds from the southeast and the northwest at almost the same time.

Hailstones having very interesting corrugations are pictured in the MONTHLY WEATHER REVIEW, for April, 1877. (See fig. 4.) These fell at Morgantown, W. Va., April 28, 1877; they were about two by one and one-half inches, and the average volume was 0.873 cubic inch.

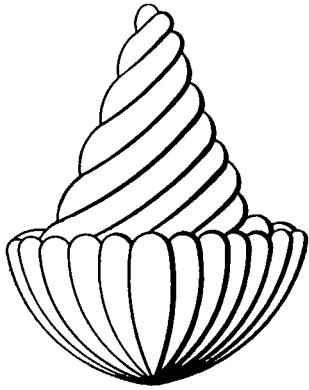


FIG. 4.—Corrugated hailstone.

—C. A.

SUGGESTIONS TO OBSERVERS OF HAILSTONES.

In connection with the excellent article by Mr. Landis it may be added that future observers of large hailstones should, if possible, note the following points:

1. Examine many nuclei and ascertain what proportion of them are (a) clear ice, (b) dry snow crystals, (c) a mushy mixture of snow or ice with or without air bubbles.
2. Devise some method of approximately measuring the temperature of the nucleus, as distinguished from the outside layer. The difference of temperature between the inside and outside may be quickly ascertained by thermo-electric methods. The average temperature of a whole hailstone, as well as of its several parts, can be determined by delicate calorimetric methods.
3. Measure the volumes of the successive layers and the nucleus. This is best done by making careful drawings of sections of the hail before it melts, and measuring from these drawings afterwards at leisure.
4. Observe whether the air bubbles in the respective layers are elongated radially, or have any other systematic arrangement.
5. Note the time which elapsed between lightning and thunder and the fall of hail, if any, apparently attending them; the connection is undoubtedly purely accidental, and the observations should bring out this fact.
6. Split the hailstones carefully with a sharp knife and note whether they have special planes of easy cleavage.—C. A.

WEATHER BUREAU MEN AS EDUCATORS.

The following lectures and addresses by Weather Bureau men have been reported:

Mr. Joseph L. Cline, June 12, 1906, on "Elements of the Earth's Atmosphere"; also June 27, on "Electricity, Atmospheric Disturbances, Weather Forecasting, and the General Work of the U. S. Weather Bureau", illustrated with stereopticon

views, both before the Summer Normal School, Corpus Christi, Texas.

Mr. P. Connor, April 10, 1905, at the monthly dinner of the Kansas City Implement and Vehicle Club, on "Weather Bureau Work"; also June 9, 1905, before the Kelvin Club of the Central High School, on "The Weather Bureau, Storms, and Forecasting"; also November 16, 1905, before the Technological Society of Kansas City, on "The Equipment of Stations, Weather and Weather Forecasting"; also December 12, 1905, before the Bancroft Club, on "Climate and the Weather"; also February 9, 1906, before the teachers and pupils of the High School, Kansas City, Kans., on "Weather Topics"; also April 11, 1906, before the Athenaeum, on "The Success of Weather Forecasting".

Mr. D. A. Seeley, October 26 and 27, 1905, before a class of 40 students in physics, Bradley Polytechnic Institute, Peoria, Ill., on "The Barometer".

Mr. A. H. Thiessen, June 27, 1906, before the class in geography, at the Summer School, State Agricultural and Mechanical College, Raleigh, N. C., on "The Weather Map and Forecasting the Weather".

Classes from colleges, schools, academies, members of teachers' institutes, etc., have visited Weather Bureau offices, to study the instruments and equipment and receive informal instruction, as reported from the following offices:

Buffalo, N. Y., June 5 and 6, 1906, a class of 38 students from the Teachers' Training School No. 10.

Evansville, Ind., June 12, 1906, the graduating class of the Baker Avenue Public School.

Kansas City, Mo., April 15, 1905, pupils and teachers from the High School, Argentine, Kans.; June 6, 1905, a class from the Central High School; October 24, 1905, a class from Loretto Academy; October 24 and 25, pupils from the High School, Kansas City, Kans.; January 20, 1906, principals of local schools; April 24, 1906, some of the Sisters and a large class from Loretto Academy.

Moorhead, Minn., June 30, 1906, pupils of the local Summer School.

Oklahoma, Okla., June 22, 1906, about forty members of the Oklahoma County Teachers' Institute.

Peoria, Ill., August 29 to September 1, 1905, 75 teachers, attending a local teachers' institute; November 6, 1905, a class of 12 students from Knox College, Galesburg, Ill.; May 2, 1906, the "As You Like It" Club of Peoria; June 15, 1906 (the annual "Open Night" at the Bradley Polytechnic Institute), more than a thousand persons.

Raleigh, N. C., June 28, 1906, geography class from the Summer School, Agricultural and Mechanical College.

Sioux City, Iowa, January 16 and 17, also June 7 and 8, 1906, classes from the Sioux City High School, in all about one hundred fifty pupils.

Vicksburg, Miss., June 27, 1906, the junior and senior classes of the Vicksburg High School.

RECENT ADDITIONS TO THE WEATHER BUREAU LIBRARY.

H. H. KIMBALL, Librarian.

The following titles have been selected from among the books recently received, as representing those most likely to be useful to Weather Bureau officials in their meteorological work and studies. Most of them can be loaned for a limited time to officials and employees who make application for them.

American Climatological Association.

Transactions. xxxi, 218, lx pp. 8°. Detroit. 1905.

Chile. Servicio Meteorologico de la Dirección del Territorio Marítimo.

Anuario. 1904. 390 pp. 4°. Valparaiso. 1905.

Egypt. Survey Department.

The physiography of the River Nile and its basin. By H. G. Lyons. viii, 411 pp. 4°. Cairo. 1906.

The rains of the Nile basin in 1905. By H. G. Lyons. 40 pp. 8°. Cairo. 1906.

Goetz, E.

Meteorological observations at Bulawayo [1897-1904]. 29 pp. 8°. n. p. n. d.

Guerrieri, Eugenio.

Sulla relazione tra l'escursione diurna della declinazione magnetica a Capodimonte e la frequenza delle macchie solari. (Rendiconto, Napoli. Fasc. 8 a 11—Agosto-Nov., 1905.) 18 pp. 8°. Napoli. 1905.

Hamberg, H[ugo] E[manuel].

Moyennes mensuelles et annuelles de la température et extrêmes de température mensuels pendant les 150 années 1756-1905 à l'Observatoire de Stockholm. (Akad. Handl. Bd. 40. No. 1.) 59 pp. f°. Uppsala and Stockholm. 1906.

Hunt, H. A.

Meteorology [of New South Wales]. 6 pp. 8°. n. t. p.

Lancaster, A.

La pluie en Belgique. 1^{er} fascicule. 224 pp. 8°. Bruxelles. 1899.

Natal. Government Astronomer.

Report. 1905. 33 pp. 1°. n. p. n. d.

Norway. Norske Meteorologiske Institut.

Nedbriagttagelser i Norge. 1905. xviii, 133 pp. f°. Kristiania. 1906.

Omodei, Domenico.

Teoria ed uso del baro-ciclonometro Algué... (Estratto con aggiunte dalle opere del P. José Algué... fatte per incarico del R. Instituto Idrografico) 66 pp. 8°. Genova. 1906.

Odessa. University. Meteorological and Magnetical Observatory.

Annales. 1905. 157 pp. 4°. Odessa. 1906.

Revue météorologique. Travaux du réseau météorologique du Sud-Ouest de la Russie. Années 1904-5. 2me série. Vol. IX. 42 pp. f°. Odessa. 1906.

RECENT PAPERS BEARING ON METEOROLOGY.

H. H. KIMBALL, Librarian.

The subjoined titles have been selected from the contents of the periodicals and serials recently received in the Library of the Weather Bureau. The titles selected are of papers or other communications bearing on meteorology or cognate branches of science. This is not a complete index of the meteorological contents of all the journals from which it has been compiled; it shows only the articles that appear to the compiler likely to be of particular interest in connection with the work of the Weather Bureau. Unsigned articles are indicated by a —

Nature. London. Vol. 74.

Dines, W. H. Balloons and kites in the service of meteorology. (May 10, 1906.) Pp. 35-36.

— Observations of shadow bands. [Note.] (June 7, 1906.) P. 135.

M. W. The surface trajectories of moving air. (June 14, 1906.) Pp. 162-163.

Martyn, G. N. Musical thunder. (June 28, 1906.) P. 200.

— [Weight, size, and velocity of raindrops.] (July 5, 1906.) Pp. 230-231.

— The meteorology of the free atmosphere. [Summary of lecture by Teisserenc de Bort.] (July 12, 1906.) Pp. 255-256.

Philosophical Transactions of the Royal Society of London. London. Series A. Vol. 206.

Chree, C. A discussion of atmospheric electric potential results at Kew from selected days during the seven years, 1898 to 1904. Pp. 299-334.

Proceedings of the Royal Society of Edinburgh. Edinburgh. Vol. 26, No. 3.

White, Peter. Some experimental results in connection with the hydrodynamical theory of seiches. Pp. 142-156.

Science. New York. New Series. Vol. 23. June 29, 1906.

Rotch, A. Lawrence. The International Meteorological Conference at Innsbruck. Pp. 975-977.

Scientific American. New York. Vol. 94. June 23, 1906.

— The influence of increased barometric pressure on the human body. Pp. 510-511.

Scientific American Supplement. New York. Vol. 62. July 21, 1906.

— Atmospheric electricity and trees. Pp. 25545-25546.

Terrestrial Magnetism and Atmospheric Electricity. Baltimore. Vol. 11. June, 1906.

Burbank, J. E. Some atmospheric radioactivity observations at Washington, showing thorium in the air. Pp. 105-107.

Burbank, J. E. Recent papers in atmospheric electricity. [Abstracts.] Pp. 108-112.

Gockel's observations of atmospheric electricity during the solar eclipse of August 30, 1905.

Nordmann's observations of the ionization of the atmosphere during the total eclipse of August 30, 1905.

The Elster-Geitel dispersion apparatus and a quantitative research in absolute dispersion measurement.

Annales de Géographie. Paris. 15 année. 15 mai 1906.

Passerat, C. Les pluies de mousson en Asie. Pp. 193-212.

Bulletin de la Société Belge d'Astronomie. Bruxelles. 11 année. Mai 1906.

Dechevrens, Marc. La radiation terrestre par ciel découvert est-elle la principale cause de refroidissement de l'air? Pp. 241-247.

L., E. Crépuscules colorés. Pp. 264-266.

Comptes Rendus de l'Académie des Sciences. Paris. Tome 142. 18 juin 1906.

Villard, P. Sur l'aurore boréale. Pp. 1330-1333.

Hergesell, H[ugo]. Sur les vents locaux du voisinage des îles Canaries. Pp. 1360-1363.

Piltzschikoff, N. Sur la polarisation du ciel pendant les éclipses du soleil. Pp. 1449-1450.

Störmer, Carl. Sur les trajectoires des corpuscules électriques dans l'espace sous l'influence du magnétisme terrestre, avec application aux aurores boréales et aux perturbations magnétiques. Pp. 1580-1583.

Revue Néphologique. Mons. Juin, 1906.

Nell, Ch. A. C. Observations de bandes polaires à Groningen et Oosterbeek de 1874 à 1904. Pp. 41-42.

Annalen der Hydrographie und Maritimen Meteorologie. Berlin. 34 Jahrgang. Heft 6. 1906.

Meinardus, Wilh. Periodische Schwankungen der Eistrift bei Island. Pp. 278-285.

Annalen der Physik. Leipzig. 4 Folge. Band 20.

Holtz, W. Verschiedene Methoden zur Prüfung der Zimmerluft-elektrizität. Pp. 587-590.

Beiblätter zu den Annalen der Physik. Leipzig. Bd. 30. Heft 11, 1906.

Eoe, A. Theoretische Betrachtungen über den Anfluss des Regenwassers. [Abstract of article by W. Uhle.] P. 575.

Gaea. Leipzig. 42 Jahrgang.

— Wasserhosen. (Juli, 1906.) Pp. 418-421.

— Grosse Niederschläge in kurzer Zeit. (Juli, 1906.) Pp. 437-439.

Hergesell, H. Der gegenwärtige und zukünftige Zustand der maritimen Meteorologie. (August, 1906.) Pp. 486-488.

W. Blitzableiteranlagen. (August, 1906.) Pp. 488-492.

Illustrirte Aeronomische Mitteilungen. Strassburg. 10 Jahrgang.

Ritter, Friedrich. Flächengröße und Winddruck. Pp. 235-241.

Meteorologische Zeitschrift. Braunschweig. Band 23. Juni 1906.

Margules, Max. Ueber die Änderung des vertikalen Temperaturgefälles durch Zusammendrückung oder Ausbreitung einer Luftmasse. Pp. 243-244.

Nimföhr, Raimund. Ueber die reale Existenz der "isothermen Zone" in 10 bis 12 km. Höhe. Pp. 245-253.

Kaehler, Karl. Ueber einige Zerstreuungs- und Bodenluftmessungen in Kiel im Herbst 1905. Pp. 253-256.

Hann, J[ulius]. Klima von S. Gertrud im Suldental. Pp. 256-261.

Hann, J[ulius]. Regenfall und Bewölkung in Südafrika. Pp. 266-267.

— Regenfall auf der Insel Ualan, Karolinen. P. 268.

Maurer, J. Die Aneroidregistrierung mit der Laufgewichtswage. Pp. 268-270.

Okada, T. Ueber die Beziehung zwischen Pulzfrequenz und atmosphärischem Druck. P. 270.

Köppen, W. Weite Ausdehnung V-förmiger Ausläufer von barometrischen Depressionen. Pp. 270-271.

— Eine neue Windfahne mit elektrischer Anzeigevorrichtung. Pp. 272-274.

— Ein neuer Windmesser für direkte Ablesung. Pp. 274-276.

Hann, J[ulius]. Täglicher und jährlicher Gang des Dampfdruckes in verschiedenen Seehöhen in Südindien. Pp. 277-278.

— Mittlere Resultate der meteorologischen Beobachtungen am R. Alfred-Observatorium auf Mauritius. Pp. 279-280.

— Periodische Temperaturschwankungen bei Föhn und ihr Zusammenhang mit stehenden Luftwellen. Pp. 281-282.

— Ein horizontaler Regenbogen. P. 282.

Hann, J[ulius]. Dauer des Sonnenscheins in Padua. Pp. 282-283.

H[ann], J[ulius]. Dauer des Sonnenscheins in Rom. P. 283.

H[ann], J[ulius]. Dauer des Sonnenscheins in Christiania. Pp. 283-284.

— Regenfall in Nicaragua. P. 284.

Mohn, —. Vierjährige Temperaturbeobachtungen in Bel-Sund, Spitzbergen. Pp. 284-285.

Petermanns Mitteilungen. Gotha. Band 52. 1906.

Weberbauer, A. Grundzüge von Klima und Pflanzenverteilung in den peruanischen Anden. Pp. 109-110.

Krebs, Wilhelm. Neuere tornados. Pp. 299-301.